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From H1 data on ρ' , ρ'' production to four-pion production in UPC

Wednesday, 25 March 2020 11:00 (18 minutes)

The central issue of the presentation will be theoretical study of four charged pion photoproduction that come from ultraperipheral heavy-ion collision. I take into account the single photoproduction of the radial excitations of the ρ^0 vector meson. The analysis includes a contribution from the incoherent sum of the $\rho'(1450)$ and $\rho''(1700)$ vs single $\rho(1570)$ vector mesons. I will show that my theoretical model has very good agreement with the experimental data for $\text{PbPb} \rightarrow \text{PbPb}\pi^+\pi^-$ mechanism. The proposed phenomenology works for the photoproduction of vector meson that decays into a two-pion channel thus using a new H1 experiment data for $\gamma p \rightarrow 2\pi^+2\pi^-$ process one can make predictions for four charged pions productions in ultra-peripheral heavy ion collisions. I will present the differential and total cross section for the $\text{PbPb} \rightarrow \text{PbPb}2\pi^+2\pi^-$ process. Finally, I have got even one order of magnitude larger (at midrapidity) cross section than it was predicted using STARlight generator. Obtained results constitute a comprehensive analysis of $\rho^0(770)$ meson excited states that decay into $2\pi^+2\pi^-$ channel.

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